AN INNOVATIVE MULTISTAKEHOLDER APPROACH TO RURAL ENTREPRENEURSHIP EDUCATION

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Abstract

Rural areas across the European Union face common structural challenges, exacerbated by recent global events. The OREN (Opportunities for Rural Entrepreneurship Networks) Erasmus+ project addresses these challenges by focusing on four key areas: forestry, agrifood, tourism, and renewable energy. The primary objective is to equip rural entrepreneurs with advanced managerial and business skills through an innovative educational platform. The project methodology combines multi-stakeholder interaction, development of impact evaluation capabilities, and promotion of continuing education in strategic business management. A multi-level approach was utilized, including literature review, collection of case studies, development of simulation models, and creation of educational modules. The project resulted in a comprehensive training course and a multistakeholder platform featuring a Process Models Repository, Model Authoring Environment, Simulation Interactive Learning Environment, and Data Acquisition Component. This holistic approach, grounded into the Systems Thinking approach and System Dynamics methodology, aims to catalyze a new paradigm of sustainable rural entrepreneurship. Hence, building on this, the OREN platform addresses critical challenges in Bulgaria's agricultural sector and offers a promising mechanism to enhance the competitiveness and sustainability of rural economies across Europe, by bridging the innovation gap and supporting emerging sectors.

Keywords: rural economy, entrepreneurship education, interactive learning environments, business models, impact evaluation, systems thinking, system dynamics

INTRODUCTION

Rural areas across the EU, despite their diversity, share common structural challenges such as poor digital connectivity, limited transportation infrastructure, population decline, limited access to services and lower level of economic development (Perpiña Castillo et al., 2023). According to the cited authors, the last challenge is reflected in lower GDP per capita, lower productivity and less diversified economy, what makes them more vulnerable to economic shocks. These issues have been exacerbated by recent global events, including the economic recession (Perpiña Castillo et al., 2023), the COVID-19 pandemic (Luca et al., 2020), and the ongoing climate crisis (Dieppe et al., 2020). Consequently, rural entrepreneurs face unprecedented complexity and uncertainty in their business environments, such as economic, social and environmental issues (Tabares et al., 2022). Hence, there is a pressing need for innovative approaches to promote rural sustainable development (Ibid.) and harness local potential while addressing inherent vulnerabilities.

The OREN (Opportunities for Rural Entrepreneurship Networks) Project n. 2021-1-IT02-KA220-ADU-000033510, funded by the Erasmus+ program in 2022, represents a significant stride in addressing the complex challenges faced by rural areas in the European Union. The project's strategic focus centers on four key "areas of opportunity" identified by the OECD (2016): forestry, agrifood, tourism, and renewable energy. These sectors hold promising potential for fostering economic diversification and growth in rural areas. However, maximizing these opportunities requires a holistic approach (Tabares et al., 2022) that not only taps into potential but also addresses the underlying vulnerabilities of rural areas. The OREN project's approach aims to equip rural entrepreneurs with advanced managerial and business skills by enabling them to analyze the root causes of successful business scenarios, thereby improving their expertise in understanding and modeling potential good practices. Therefore, the employed project methodology combines multi-stakeholder interaction, the development of "impact evaluation capabilities" for rural entrepreneurs (Tsaples, Armenia & De Angelis, 2024), and the promotion of continuing education (European Commission, 1995; Weber, 2016) in strategic business management (Cedefop, 2019). This integrative approach is designed to enhance the opportunities available in modern rural economies while simultaneously addressing the vulnerabilities that have historically hindered rural development.

The primary objective of this article is to describe the empirical research conducted through the OREN project. Specifically, we aim at:

a) discovering insights and emerging patterns in rural business development in Bulgaria and analyzing factors contributing to successful rural businesses

b) mapping the structural elements of rural development and exploring them through simulation

c) developing and promoting work-based learning for agricultural entrepreneurs to enhance their business skills

Through this article, we aim to contribute to the growing body of knowledge on sustainable rural development strategies, offering insights that can inform policy-making and practical interventions in rural areas across the European Union.

MATERIALS AND METHODS

State of the art in Bulgaria

In the context of developing a multi-stakeholder platform for rural entrepreneurs in Bulgaria, it is crucial to understand the current state of the art in the country's rural economy and agricultural sector.

Bulgaria's agricultural landscape is characterized by a pronounced dichotomy between large and small farms, with the latter dominating numerically but the former accumulating significant income and expanding their economic boundaries (Mishev et al., 2019). This structural imbalance has persisted despite substantial support from European funds and national schemes, amounting to approximately €7.5 billion per programming period. The sector faces challenges in terms of labor compensation, which remains lower than in other economic sectors, contributing to the outflow of workers and exacerbating the already critical shortage of agricultural labor.

Despite these challenges, Bulgaria has demonstrated remarkable potential in certain areas, particularly in organic production. The country has experienced the most dynamic development of organic farming in the EU in recent years, with organic operators increasing more than 22 times between 2008 and 2016 (Mishev et al., 2019). However, this potential remains underutilized, as Bulgaria still lags behind the EU average in terms of organic production areas. This discrepancy highlights the need for targeted support and innovation in

the sector, which could be facilitated through a multi-stakeholder platform.

The rural economy in Bulgaria is increasingly diversifying, with tourism emerging as a significant driver of economic growth. Rural tourism, in particular, has been gaining traction and is beginning to compete with traditional forms of tourism in the country. For rural settlements with natural, historical, cultural, and environmental assets, tourism represents an economic activity with the potential to revitalize local economies (Bankova, 2020). However, the development of rural tourism is hindered by infrastructural limitations, demographic challenges, and uneven distribution of resources across regions.

In terms of technological advancement and innovation, Bulgaria faces significant challenges. The country is classified as a "modest innovator" according to the European Commission's innovation report, with an innovation index value below 50% of the EU average (Mishev et al., 2019). This underscores the urgent need for investment in research and development, as well as the adoption of innovative practices and technologies in rural areas. A multi-stakeholder platform could play a crucial role in bridging this innovation gap by facilitating knowledge transfer and collaboration between various actors in the rural economy.

The demographic situation in rural Bulgaria presents both challenges and opportunities for entrepreneurship. While rural areas are experiencing depopulation and aging, this demographic shift also creates a pressing need for innovative solutions to maintain economic vitality. The introduction of digital technologies and the development of the bioeconomy and circular economy principles offer promising avenues for rural entrepreneurship (Mishev et al., 2019). A multi-stakeholder platform could serve as a catalyst for these developments by connecting entrepreneurs with resources, knowledge, and potential collaborators.

In conclusion, the state of the art in rural Bulgaria presents a complex landscape of challenges and opportunities for entrepreneurship. While structural imbalances, demographic shifts, and technological lag pose significant hurdles, there is substantial potential in areas such as organic farming, rural tourism, and the bioeconomy. A multi-stakeholder platform for rural entrepreneurs could play a pivotal role in addressing these challenges and leveraging opportunities by fostering collaboration, facilitating knowledge transfer, and promoting innovation across the rural economy.

Research method

To reach the objectives of the OREN project, a multi-level approach was utilized. To begin, a deep dive of scientific databases was conducted, with a specific focus on rural business modelling simulation, ideally conducted using the System Dynamics methodology. Secondly, all project partners participated in the collection and analysis of successful case studies and best practices originating from their respective countries. The outcome of this activity was the creation of a knowledge repository that can assist rural entrepreneurs in the investigation circa how other successful rural business have been developed, as well as provide insights that help better clarify the content of the other results developed in the context of the OREN project. Third, a repository of simulation models pertaining to key areas of rural entrepreneurship was developed. Said repository can be used by rural entrepreneurs either as a teaching/learning tool that helps clarify the development process required for their own business simulation models, or it can be used "as-is" to test, by means of simulation, various business scenarios focused on specific needs. This result is explored in more detail in the "Multistakeholder platform" section of the present publication. Finally, based on the insights from all previous

activities 5 modules/courses were developed that cover the following knowledge areas:

1) European and national rural policy frameworks

2) Business Management Skills

3) Sustainable Innovation Skills

4) Modeling and Simulation skills and (

5) Communication and Soft Skills;

This final result of the project is explored in more detail in the proceeding section.

RESULTS AND DISCUSSION

The OREN training course for Rural Entrepreneurs

Building upon the comprehensive research findings presented in the previous section, the OREN project has developed and implemented an innovative educational platform specifically tailored to address the complex challenges faced by rural entrepreneurs. The evidence-based approach to curriculum design represents an innovation in the field of rural entrepreneurship education (Lyons et al., 2019), directly responding to the multifaceted needs identified through our empirical investigation. The research findings ensured a methodological continuity and a strong alignment between the identified needs of rural entrepreneurs and the educational outcomes of the intervention. Firstly, the needs assessment revealed a complex interplay of challenges facing rural entrepreneurs, including: i. deficits in technical expertise and domain-specific knowledge; ii. unfavorable socio-economic conditions; iii. limited inter-organizational collaboration among small and medium-sized enterprises (SMEs); iv. insufficient access to financial resources and investment opportunities. These findings, consistent with extant literature on rural entrepreneurship (Korsgaard et al., 2015; Müller & Korsgaard, 2018), underscore the necessity for a holistic educational approach (Stephenson, 2001; Nicolaides & Marsick,

2016) that addresses not only technical skills but also the broader socio-economic context (UNESCO, 2017) of rural entrepreneurship.

In response to these identified challenges, our research also elucidated key competencies crucial for rural entrepreneurial success:

- network development and management skills;

- strategic business planning and business models evaluation capabilities;

- opportunity recognition and exploitation proficiency;

- financial literacy and management acumen.

These competencies formed the basis for the five primary learning outcomes (Council of the European Union, 2017) of the OREN training course:

1) Critical understanding of European and national policy frameworks relevant to rural entrepreneurship

2) Proficiency in comprehensive business management techniques

3) Capacity for sustainable innovation in rural contexts

4) Mastery of essential communication and interpersonal skills

5) Competence in utilizing OREN's Modeling and Simulation tools for dynamic insight generation and innovation facilitation.

The OREN course employs a blended learning approach, integrating best practices from existing entrepreneurship education programs with innovative, technology-enhanced learning methodologies. Key features of the course delivery include: Multilingual content delivery to accommodate linguistic diversity across European rural communities; Asynchronous online learning format, enhancing accessibility for geographically dispersed learners; Integration of theoretical frameworks with practical, experiential learning opportunities; Incorporation of advanced modeling and simulation tools, fostering higher-

order thinking skills and decision-making capabilities.

A distinguishing feature of the OREN training course is the integration of proprietary Modeling and Simulation tools within the curriculum. This innovative approach offers participants hands-on experience with advanced analytical techniques (i.e.: ex-ante evaluation of business models expected impacts by means of system dynamics simulation), fostering the development of dynamic capabilities (Teece, 2007) essential for navigating the complex, evolving landscape of rural economies.

This holistic approach granted by the Systems Thinking methodology, which integrates theoretical knowledge, practical skills development, and exposure to cutting-edge analytical tools, aims to catalyze a new paradigm of sustainable rural entrepreneurship, equipping participants with the multifaceted competencies required to drive sustainable economic growth in rural contexts.

The Multistakeholder platform

As detailed in the Methodology section of the present publication, a key output of the OREN project has been the development of a Multistakeholder platform. Said output has been developed as the primary objective of the third Project Result of the project, the scope of which is detailed in the project proposal document:

"[Project Result 3] deals with the aggregation of already available tools and ad-hoc models so to create a framework (including simulation models, interactive learning environment, connection to real data, model repository and learning community) that can be used to identify and analyze real world scenario through virtual real world exercising for improving the knowledge and better structuring the decision-making process of rural entrepreneurs."

This overarching objective has guided the development of the multistakeholder platform, which is structured according to the following architecture:
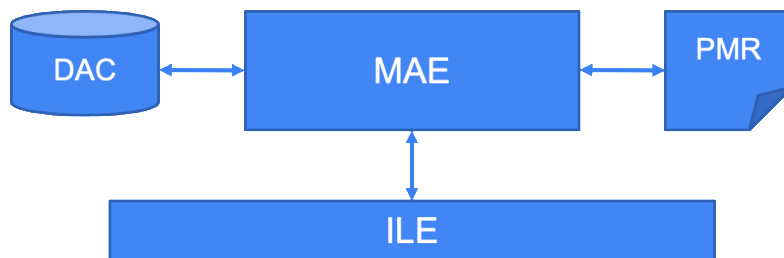
Figure. 1 The OREN Platform logical architecture

- The Process Models Repository (PMR) acts as a central repository and a mechanism for management of model descriptions. This repository is built as a hub of knowledge for all modelling efforts, as it provides a reusable library of small, simple, local, user-generated or expert-generated policy models that constitute the interoperable building blocks of more complex business prototypes. It contains information on the model type, mode of operation, assumptions, interfaces (input and output), domain of application and generality (general models vs. area or domain specific models). The PMR is accessible on the same platform which hosts the OREN course, and is available only to those that have registered to said course.

- The Model Authoring Environment (MAE) provides a graphical and easy-to-use interface for simple policy models creation, validation and management. This toolkit enables the development of integrated models. It constitutes an intuitive approach to interactive simulation models composition and calibration from a bottom-up perspective that allows for linking in a plug-and-play manner on the larger scale.

- The Simulation Interactive Learning Environment (ILE) provides a visual dynamic interface to allow users to directly manipulate the parameters and the underlying model. This facilitates intuitive visual analytics of data for strategy definition, referring to the research focused on making sense of large datasets, such as those provided as open government data stemming out from model operation and simulations. Both the MAE and ILE are centralized through the use of the simulation software known as "Silico" (Silico.app, 2024), which is accessed through web browsers without the need for downloads.

- The Data Acquisition Component (DAC) for embedding relevant data into the simulation models. The DCC is hosted online as a public Observatory and is the result of the initial research conducted by all project partners, detailed in the methodology (Tsaples, et al., 2024).

CONCLUSION

The OREN project's multi-stakeholder platform for rural entrepreneurs addresses critical challenges in Bulgaria's agricultural sector, characterized by structural imbalances and innovation deficits. This platform is particularly relevant given Bulgaria's status as a "modest innovator" (Mishev et al., 2019) and the untapped potential in organic farming and rural tourism. By facilitating knowledge transfer, fostering collaboration, and promoting innovative practices, the platform aligns with Bulgaria's rural development needs, especially in the context of demographic challenges and the imperative for economic diversification.

The work performed in the OREN project is of course limited in the sense that the funding scheme (Erasmus+) did not allow for an extensive integration of technologies but started to deal with the relevant issue of organizational ecosystems addressed through a human-centric approach and by means of a systemic mindset. Future evolutions of the platform will envision the possibility to evolve towards not only an educational platform (for example with the addition of other managerial and/or technological courses or with the integration of other modeling examples, simulation scenarios, etc.) but also towards a decision support system, aiming at providing entrepreneurs with a fully stacked and up-to-the-state-of-the-art IT solution. This will necessarily have to entail a proper IT integration of the various subsystems, with the potential integration of AI supporting tools.

The OREN platform's comprehensive approach, encompassing digital technologies, bioeconomy principles, and circular economy concepts, offers a promising mechanism to enhance the competitiveness and sustainability of Bulgaria's rural economy. This initiative is poised to play a crucial role in bridging the innovation gap, supporting emerging sectors like rural tourism, and addressing the pressing socio-economic issues facing Bulgaria's rural areas, thereby contributing significantly to the country's broader rural development objectives.

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